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☑ Final Report
☐ Revised Report

Report Date:
25-Feb-19 15:19

Laboratory Report
SC53464

Gulf Oil L.P.
281 Eastern Avenue
Chelsea, MA 02150
Attn: Andrew P. Adams

Project: Gulf Terminal - Chelsea, MA
Project #: [none]

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.
All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
Connecticut # PH-0777
Florida # E87936
Maine # MA138
New Hampshire # 2972/2538
New Jersey # MA011
New York # 11393
Pennsylvania # 68-04426/68-02924
Rhode Island # LAO00348
USDA # P330-15-00375
Vermont # VT-11393

Authorized by:

Andrew Fenton
Quality Services Manager

Eurofins Spectrum Analytical holds primary certification in the State of Massachusetts for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of Massachusetts does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.
Please note that this report contains 11 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Eurofins Spectrum Analytical, Inc.

Eurofins Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Eurofins Spectrum Analytical, Inc. is currently accredited for the specific method or analyte indicated. Please refer to our 'Quality' web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Eurofins Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey, Pennsylvania and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (PA-68-04426).

Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

Sample Summary

Work Order: SC53464

Project: Gulf Terminal - Chelsea, MA

Project Number: [none]

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
SC53464-01	Outfall 003	Surface Water	08-Feb-19 00:00	11-Feb-19 14:30
SC53464-02	Trip Blank	Trip Blank	08-Feb-19 00:00	11-Feb-19 14:30

CASE NARRATIVE:

Data has been reported to the RDL. This report excludes estimated concentrations detected below the RDL and above the MDL (J-Flag).

All non-detects and all results below the reporting limit are reported as "<" (less than) the reporting limit in this report.

The samples were received 0.8 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group. If method or program required MS/MSD/Dup were not performed, sufficient sample was not provided to the laboratory.

Analyses for Total Hardness, pH, and Total Residual Chlorine fall under the state of Pennsylvania code Chapter 252.6 accreditation by rule.

There is no relevant protocol-specific QC and/or performance standards non-conformances to report.

Sample Acceptance Check Form

Client:	Gulf Oil L.P.
Project:	Gulf Terminal - Chelsea, MA / [none]
Work Order:	SC53464
Sample(s) received on:	2/11/2019

The following outlines the condition of samples for the attached Chain of Custody upon receipt.

	Yes	No	N/A
Were custody seals present?	☐	☑	☐
Were custody seals intact?	☐	☐	☑
Were samples received at a temperature of ≤ 6°C?	☑	☐	☐
Were samples refrigerated upon transfer to laboratory representative?	☑	☐	☐
Were sample containers received intact?	☑	☐	☐
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	☑	☐	☐
Were samples accompanied by a Chain of Custody document?	☑	☐	☐
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	☐	☑	☐
Did sample container labels agree with Chain of Custody document?	☑	☐	☐
Were samples received within method-specific holding times?	☑	☐	☐

Summary of Hits

Lab ID: SC53464-01 **Client ID:** Outfall 003

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Total Suspended Solids	5.0		5.0	mg/l	SM2540D-11
Benzene	1		1	ug/l	SW-846 8260C

Please note that because there are no reporting limits associated with hazardous waste characterizations or micro analyses, this summary does not include hits from these analyses if included in this work order.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Outfall 003 SC53464-01	[none]	Surface Water	08-Feb-19 00:00	11-Feb-19

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
General Chemistry Parameters													
	pH	**7.33**	pH	pH Units			1	ASTM D 1293-99B	11-Feb-19 15:00	11-Feb-19 15:00	ABW	1900190	X
Subcontracted Analyses													
Subcontracted Analyses Prepared by method SW-846 5030C													
Analysis performed by Eurofins Lancaster Laboratories Environmental - M-PA009													
71-43-2	Benzene	**1**		ug/l	1	0.2	1	SW-846 8260C	21-Feb-19 03:43	21-Feb-19 03:44	M-PA009	190513A/	
91-20-3	Naphthalene	< 5		ug/l	5	1	1	"	"	"	"	"	
Surrogate recoveries:													
17060-07-0	*1,2-Dichloroethane-d4*	*100*			*80-120 %*			"	"	"	"	"	
460-00-4	*4-Bromofluorobenzene*	*100*			*80-120 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*103*			*80-120 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*99*			*80-120 %*			"	"	"	"	"	
Subcontracted Analyses Prepared by method SW-846 3510C													
Analysis performed by Eurofins Lancaster Laboratories Environmental - M-PA009													
50-32-8	Benzo(a)pyrene	< 0.05		ug/l	0.05	0.01	1	SW-846 8270D SIM	15-Feb-19 10:00	18-Feb-19 12:04	M-PA009	045WAJ0	
91-20-3	Naphthalene	< 0.08		ug/l	0.08	0.03	1	"	"	"	"	"	
Surrogate recoveries:													
38072-94-5	*1-Methylnaphthalene-d10*	*92*			*52-119 %*			"	"	"	"	"	
63466-71-7	*Benzo(a)pyrene-d12*	*71*			*46-112 %*			"	"	"	"	"	
93951-69-0	*Fluoranthene-d10*	*92*			*61-117 %*			"	"	"	"	"	
Subcontracted Analyses													
Prepared by method E1664A													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Oil and Grease by EPA 1664A	< 1.6		mg/l	1.6	1.6	1.1	E1664A	14-Feb-19 07:22	14-Feb-19 07:22	M-CT007	466901A	
Prepared by method SM2540D-11													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Total Suspended Solids	**5.0**		mg/l	5.0	5.0	1	SM2540D-11	13-Feb-19 08:45	13-Feb-19 08:45	M-CT007	466755A	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Trip Blank SC53464-02	[none]	Trip Blank	08-Feb-19 00:00	11-Feb-19

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Subcontracted Analyses													
Subcontracted Analyses Prepared by method SW-846 5030C													
Analysis performed by Eurofins Lancaster Laboratories Environmental - M-PA009													
71-43-2	Benzene	< 1		ug/l	1	0.2	1	SW-846 8260C	21-Feb-19 04:05	21-Feb-19 04:06	M-PA009.190513A/		
91-20-3	Naphthalene	< 5		ug/l	5	1	1	"	"	"	"	"	
Surrogate recoveries:													
17060-07-0	*1,2-Dichloroethane-d4*	*102*			*80-120 %*			"	"	"	"	"	
460-00-4	*4-Bromofluorobenzene*	*99*			*80-120 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*102*			*80-120 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*98*			*80-120 %*			"	"	"	"	"	

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
ASTM D 1293-99B										
Batch 1900190 - General Preparation										
Duplicate (1900190-DUP1)			**Source: SC53464-01**			Prepared & Analyzed: 11-Feb-19				
pH	**7.34**		pH Units			7.33			0.1	5
Reference (1900190-SRM1)						Prepared & Analyzed: 11-Feb-19				
pH	**6.02**		pH Units		6.00		100	97.5-102.5		
Reference (1900190-SRM2)						Prepared & Analyzed: 11-Feb-19				
pH	**6.04**		pH Units		6.00		101	97.5-102.5		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW-846 8260C										
Batch L190513AA - SW-846 5030C										
LCS (LCSL20Q)					Prepared & Analyzed: 20-Feb-19					
Benzene	**22**		ug/l	1	20		109	80-120		
Naphthalene	**21**		ug/l	5	20		107	53-124		
Surrogate: Toluene-d8	*50*		ug/l		*50*		*100*	*80-120*		
Surrogate: 4-Bromofluorobenzene	*50*		ug/l		*50*		*101*	*80-120*		
Surrogate: 1,2-Dichloroethane-d4	*51*		ug/l		*50*		*102*	*80-120*		
Surrogate: Dibromofluoromethane	*52*		ug/l		*50*		*103*	*80-120*		
LCSD (LCSL20Y)					Prepared & Analyzed: 20-Feb-19					
Naphthalene	**21**		ug/l	5	20		106	53-124	0	30
Benzene	**21**		ug/l	1	20		107	80-120	2	30
Surrogate: Toluene-d8	*50*		ug/l		*50*		*100*	*80-120*		
Surrogate: Dibromofluoromethane	*51*		ug/l		*50*		*102*	*80-120*		
Surrogate: 1,2-Dichloroethane-d4	*51*		ug/l		*50*		*101*	*80-120*		
Surrogate: 4-Bromofluorobenzene	*51*		ug/l		*50*		*101*	*80-120*		
Blank (VBLKL20B)					Prepared & Analyzed: 20-Feb-19					
Naphthalene	< 5		ug/l	5				-		
Benzene	< 1		ug/l	1				-		
Surrogate: 1,2-Dichloroethane-d4	*51*		ug/l		*50*		*101*	*80-120*		
Surrogate: Toluene-d8	*50*		ug/l		*50*		*99*	*80-120*		
Surrogate: Dibromofluoromethane	*51*		ug/l		*50*		*102*	*80-120*		
Surrogate: 4-Bromofluorobenzene	*50*		ug/l		*50*		*99*	*80-120*		
SW-846 8270D SIM										
Batch 19045WAJ026 - SW-846 3510C										
LCS (045WJLCSQ)					Prepared: 15-Feb-19 Analyzed: 18-Feb-19					
Naphthalene	**0.8**		ug/l	0.08	1		78	55-110		
Benzo(a)pyrene	**0.9**		ug/l	0.05	1		89	71-112		
Surrogate: 1-Methylnaphthalene-d10	*0.8*		ug/l		*1*		*85*	*52-119*		
Surrogate: Fluoranthene-d10	*0.9*		ug/l		*1*		*89*	*61-117*		
Surrogate: Benzo(a)pyrene-d12	*0.8*		ug/l		*1*		*82*	*46-112*		
LCSD (P5WJLCSY)					Prepared: 15-Feb-19 Analyzed: 18-Feb-19					
Benzo(a)pyrene	**0.9**		ug/l	0.05	1		89	71-112	1	30
Naphthalene	**0.8**		ug/l	0.08	1		79	55-110	1	30
Surrogate: 1-Methylnaphthalene-d10	*0.9*		ug/l		*1*		*86*	*52-119*		
Surrogate: Benzo(a)pyrene-d12	*0.8*		ug/l		*1*		*80*	*46-112*		
Surrogate: Fluoranthene-d10	*0.9*		ug/l		*1*		*89*	*61-117*		
Blank (SBLKWJ045B)					Prepared: 15-Feb-19 Analyzed: 18-Feb-19					
Naphthalene	< 0.08		ug/l	0.08				-		
Benzo(a)pyrene	< 0.05		ug/l	0.05				-		
Surrogate: 1-Methylnaphthalene-d10	*0.9*		ug/l		*1*		*87*	*52-119*		
Surrogate: Fluoranthene-d10	*0.9*		ug/l		*1*		*89*	*61-117*		
Surrogate: Benzo(a)pyrene-d12	*0.8*		ug/l		*1*		*81*	*46-112*		

Subcontracted Analyses - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
E1664A										
Batch 466901A - E1664A										
BLK (CC50342-BLK)						Prepared & Analyzed: 14-Feb-19				
Oil and Grease by EPA 1664A	< 1.4		mg/l	1.4	40		BRL	-		
LCS (CC50342-LCS)						Prepared & Analyzed: 14-Feb-19				
Oil and Grease by EPA 1664A	**38.70**		mg/l	1.4	40		97	85-115		20
LCSD (CC50342-LCSD)						Prepared & Analyzed: 14-Feb-19				
Oil and Grease by EPA 1664A	**38.60**		mg/l	1.4	40		97	85-115	0.0	20
SM2540D-11										
Batch 466755A - SM2540D-11										
BLK (CC49891-BLK)						Prepared & Analyzed: 13-Feb-19				
Total Suspended Solids	< 5.0		mg/l	5.0	61.3		BRL	-		
DUP (CC49891-DUP)			**Source: CC49891**			Prepared & Analyzed: 13-Feb-19				
Total Suspended Solids	< 5.0		mg/l	5.0	61.3			-		
LCS (CC49891-LCS)						Prepared & Analyzed: 13-Feb-19				
Total Suspended Solids	**53.00**		mg/l	5.0	61.3		86	85-115		

Notes and Definitions

dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference
OG	The required Matrix Spike and Matrix Spike Duplicate (MS/MSD) for Oil & Grease method 1664B can only be analyzed when the client has submitted sufficient sample volume. An extra liter per MS/MSD is required to fulfill the method QC criteria. Please refer to Chain of Custody and QC Summary (MS/MSD) of the Laboratory Report to verify ample sample volume was submitted to fulfill the requirement.
pH	The method for pH does not stipulate a specific holding time other than to state that the samples should be analyzed as soon as possible. For aqueous samples the 40 CFR 136 specifies a holding time of 15 minutes from sampling to analysis. Therefore all aqueous pH samples not analyzed in the field are considered out of hold time at the time of sample receipt. All soil samples are analyzed as soon as possible after sample receipt.

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.

SC53464 BM

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CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:
- [x] Standard TAT - 7 to 10 business days
- [ ] Rush TAT - Date Needed: _____

All TATs subject to laboratory approval
Min. 24-hr notification needed for rushes
Samples disposed after 30 days unless otherwise instructed.

Report To: Andrew Adams
Gulf Oil LP
281 Eastern Ave.
Chelsea MA. 02150
Telephone #: 617-884-5980
Project Mgr: Andrew Adams

Invoice To: Christopher Gill
Gulf Oil LP
80 William St. Suite 400
Wellesley, MA. 02481-3705
P.O No.: _____ Quote #: _____

Project No: _____
Site Name: Gulf Chelsea Terminal
Location: 281 Eastern Ave Chelsea State: MA
Sampler(s): Aleksandar Marinkovic

F=Field Filtered 1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid
7=CH3OH 8=$NaHSO_4$ 9=Deionized Water 10=H_3PO_4 11= NONE 12= _____

DW=Drinking Water GW=Groundwater SW=Surface Water WW=Waste Water
O=Oil SO=Soil SL=Sludge A=Indoor/Ambient Air SG=Soil Gas
X1= _____ X2= _____ X3= _____

G= Grab C=Compsite

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix	Containers: # of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	List Preservative Code below: 2	3	11	11	11	Analysis: VOCs (Benz, Napht)	O&G	PAH	TSS	pH	Check if chlorinated
SC53464-1	Outfall 003	2/8/19		G	SW	3									X					☐
	Outfall 003	2/8/19		G	SW		1									X				☐
	Outfall 003	2/8/19		G	SW		2										X			☐
	Outfall 003	2/8/19		G	SW				1									X		☐
	Outfall 003	2/8/19		G	SW				1										X	☐
	Trip Blank				TB	2														☐
																				☐
																				☐
																				☐
																				☐

QA/QC Reporting Notes:
* additional charges may appply

MA DEP MCP CAM Report? ☐ Yes ☐ No
CT DPH RCP Report? ☐ Yes ☐ No
☐ Standard ☐ No QC ☐ DQA*
☐ ASP A* ☐ ASP B*
☐ NJ Reduced* ☐ NJ Full*
☐ Tier II* ☐ Tier IV*
☐ Other: _____
State-specific reporting standards:

only run benzene & naphthalene

Relinquished by:	Received by:	Date:	Time:	Temp °C
		2/8/19	1830	Observed: 8
		2/11/19	14:30	Correction Factor: 0
				Corrected: 8
				IR ID #: 1

☐ EDD format: _____
☒ E-mail to: adams@gulfoil.com, cgill@gulfoil.com and jennifer.atkins@aecom.com

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken
☐ Ambient ☐ Iced ☒ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

Batch Summary

1900190

General Chemistry Parameters

1900190-DUP1
1900190-SRM1
1900190-SRM2
SC53464-01 (Outfall 003)

19045WAJ026

Subcontracted Analyses

045WJLCSQ
P5WJLCSY
SBLKWJ045B
SC53464-01 (Outfall 003)

466755A

Subcontracted Analyses

CC49891-BLK
CC49891-DUP
CC49891-LCS
SC53464-01 (Outfall 003)

466901A

Subcontracted Analyses

CC50342-BLK
CC50342-LCS
CC50342-LCSD
SC53464-01 (Outfall 003)

L190513AA

Subcontracted Analyses

LCSL20Q
LCSL20Y
SC53464-01 (Outfall 003)
SC53464-02 (Trip Blank)
VBLKL20B